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10/525,651	02/25/2005	Hidekazu Kimura	Q86488	7987

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EXAMINER	
HAN, KWANG S	

ART UNIT	PAPER NUMBER
1795	

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02/24/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,651	KIMURA ET AL.	
	Examiner	Art Unit	
	Kwang Han	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-13,15-27 and 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-13,15-27 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/25/05,6/8/06,8/2/06,9/14/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

METHOD FOR OPERATING FUEL CELL, FUEL CELL, AND MOBILE DEVICE AND MOBILE PHONE USING SAME

Examiner: K. Han SN: 10/525,651 Art Unit: 1795 February 23, 2009

DETAILED ACTION

1. The Applicant's amendment filed on November 19, 2008 was received. Claims 1-4, 8-24, and 28 were amended. Claims 4, 14, and 28 were cancelled.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Information Disclosure Statement

3. The information disclosure statement filed June 8, 2006, August 2, 2006 and February 25, 2005 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered. Documents JP 52-66937, JP 58-82478, JP 51-4714, JP 2000-512797, JP 63-202861, JP 2001-93551, JP 11-79703, JP 5-54900, JP 2000-317358, JP 2000-191304, JP 2002-93439, JP 52-66937, JP 52-73426, JP 2000-106201, JP 2001-102070, JP 2002-184430, JP 2004-14193, JP 2003-345476, JP 2002-56856 have not been considered. Applicant's supplied english-language versions of the search reports and foreign patent office actions make no mention of the documents as listed above.

4. The information disclosure statement filed February 25, 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. A copy of the JP 50-161024 document has not been submitted and no explanation of relevance is present.

Specification

5. The objections to the specification have been withdrawn in view of the amendments to the specification.

Claim Objections

6. The objections to the claims have been withdrawn in view of the amendments to claims 11-24.

Claim Rejections - 35 USC § 103

7. The claim rejection under 35 U.S.C. 103(a) as unpatentable over Hatanaka et al. in view of Takahashi on claims 1, 3, 5, 6, 7, 11, 13-17, and 26-27 are withdrawn, because claims 1, 3, 11, 13, 15-17, and 26 have been amended.

8. The claim rejections under 35 U.S.C. 103(a) as unpatentable over Hatanaka et al. in view of Takahashi as applied to claims 1 and 26 and further in view of Lehman et al. on claims 4 and 28 are withdrawn, because claims 4 and 28 have been cancelled.

9. The claim rejection under 35 U.S.C. 103(a) as unpatentable over Hatanaka et al. in view of Takahashi as applied to claims 1, 11, and 26 and further in view of Gyoten et al. on claims 2, 8, 9, 12, 18, 19, and 29 are withdrawn, because claims 1, 2, 8, 9, 12, 18, 19, and 26 have been amended.

10. The claim rejection under 35 U.S.C. 103(a) as unpatentable over Hatanaka et al. in view of Takahashi as applied to claims 1 and 11 above and further in view of Maricle et al. on claims 10 and 20 are withdrawn, because claims 1, 10 and 20 have been amended.

11. The claim rejection under 35 U.S.C. 103(a) as unpatentable over Hatanaka et al. in view of Takahashi as applied to claim 11 above and further in view of Tanaka et al. and Kitamura et al. on claims 21 and 24 are withdrawn, because independent claim 11 has been amended.

12. The claim rejection under 35 U.S.C. 103(a) as unpatentable over Hatanaka et al. in view of Takahashi, Tanaka et al., and Kitamura et al. as applied to claim 21 above and further in view of Little on claim 22 is withdrawn, because independent claim 11 has been amended.

13. The claim rejection under 35 U.S.C. 103(a) as unpatentable over Hatanaka et al. in view of Takahashi as applied to claim 11 above and further in view of Little on claims 23 and 25 are withdrawn, because independent claim 11 has been amended.

14. Claim 1, 3, 5, 6, 7, 11, 15-17, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. (JP 2002-231290, machine translation) in view of Takahashi (JP 08-287941, machine translation) and Lehman et al (US 5879826).

Regarding claim 1, Hatanaka et al. is directed to a fuel cell (32) comprised of the following:

- a fuel electrode [0003],
- an oxidant electrode [0003], and
- generates electric power based on a supply of organic liquid fuel [Abstract].

Hatanaka discloses carbon dioxide which is emitted as a by-product of power generation and adheres to the fuel electrode [0026] which is removed with the use of convection [0027] but is silent towards the use of a vibration generating unit.

Takahashi teaches electrode plates which form bubbles during charging that are adhered to the surface of the electrode which are removed with the use of a vibration generating unit to remove gas bubbles which form on an electrode for the benefit of quickly removing them to reduce electrical resistance [Abstract].

Hatanaka and Takahashi are analogous art because they are both concerned with removing bubbles from the surface of an electrode. It would have been obvious to

one of ordinary skill in the art at the time of the invention to apply Takahashi's vibration unit in Hatanaka's fuel electrode for the benefit of quickly removing adhered gas bubbles using vibration to reduce blockage and increase flow of fuel to the electrode.

Lehman et al. teaches auxiliary devices (parasitic loads) of the fuel cell which are driven by the output of the fuel cell main unit for the benefit of supporting the functioning of the fuel cell (Column 2, Lines 44-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to power the vibration generating unit of Hatanaka modified by Takahashi by an output of the fuel cell because Lehman teaches it is well recognized in the art that sub-system's in support of the operation of the fuel cell can draw a parasitic load from the fuel cell.

The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art. (MPEP 2143)

Regarding claim 3, the teachings of Hatanaka, Takahashi and Lehman as discussed above are herein incorporated. Takahashi further discloses the use of a power applying unit (actuation current feed means, 15) [0036] which provides alternating electric power [0022] to allow the vibration generating unit to oscillate.

Regarding claims 5 and 15, Takahashi further discloses a vibration generating unit comprised of a piezoelectric vibrator [0022].

Regarding claims 6 and 16, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Hatanaka et al. is silent as to the placement of a vibration generating unit arranged on the fuel cell main unit.

Takahashi teaches the placement of the vibration generating unit within the main power generating unit for the benefit of providing direct vibration to the electrodes [0033]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the vibration generating unit on the fuel cell main unit because it would provide direct vibration to the electrodes to remove the evolved gases.

Regarding claims 7 and 17, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Hatanaka et al. is silent as to the use of a holding substrate which transmits vibrations.

Takahashi teaches the use of a substrate (battery casing, Drawing 5) [0033, 0038] for the benefit of transferring vibrations to the power generating unit. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Takahashi's holding substrate in Hatanaka's fuel cell because Takahashi teaches it has the benefit of providing a medium to directly transfer the vibrations to the electrode.

Regarding claim 11, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Hatanaka et al. is further directed towards a portable information device [0001] comprising a body (20) and a fuel cell which is arranged in said body (10) [Abstract].

Regarding claim 26, Hatanaka is directed towards an operation method of a fuel cell comprised of the following:

- generating electric power by supplying organic liquid fuel to a fuel electrode [0021], and
- oxidant to an oxidant electrode [0023].

Hatanaka discloses carbon dioxide which is emitted as a by-product of power generation and adheres to the fuel electrode [0026] which is removed with the use of convection [0027] but is silent towards the method of vibration.

Takahashi teaches electrode plates which form bubbles during charging that are adhered to the surface of the electrode which are removed with the use of a vibration generating unit to remove gas bubbles which form on an electrode for the benefit of quickly removing them [Abstract].

Hatanaka and Takahashi are analogous art because they are both concerned with removing bubbles from the surface of an electrode. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Takahashi's vibration method in Hatanaka's fuel electrode for the benefit of quickly removing adhered gas bubbles.

Lehman et al. teaches auxiliary devices (parasitic loads) of the fuel cell which are driven by the output of the fuel cell main unit for the benefit of supporting the functioning of the fuel cell (Column 2, Lines 44-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to power the vibration generating unit of Hatanaka modified by Takahashi by an output of the fuel cell because Lehman teaches it is well recognized in the art that sub-system's in support of the operation of the fuel cell can draw a parasitic load from the fuel cell.

Regarding claim 27, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Takahashi further discloses the use of a power applying unit (actuation current feed means, 15) [0036] which provides alternating electric power [0022] to allow the vibration generating unit comprised of a piezoelectric vibrator [0022] to oscillate.

15. Claim 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1 and 11 above and further in view of Ohara et al. (US 6215272).

Regarding claims 3 and 13, the teachings of Hatanaka, Takahashi, and Lehman as discussed above are herein incorporated. Takahashi discloses the use of a power applying unit (actuation current feed means, 15) [0036] which provides alternating electric power [0022] to allow the vibration generating unit to oscillate but is silent towards a the power applying unit converting direct current into alternating current.

Ohara teaches a fuel cell device which uses a DC-AC converter for converting a direct current power into an alternating current for the use by an auxiliary device necessary for driving the fuel cell device [Abstract]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a DC-AC converter in the fuel cell of Hatanaka, Takahashi, and Lehman because Ohara teaches it provides alternating current to auxiliary devices which are necessary for driving the fuel cell.

16. Claim 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1 and 11 above and further in view of Kawatsu (US 5925476).

Regarding claims 2 and 12, the teachings of Hatanaka et al., Takahashi, and Lehman et al. as discussed above are herein incorporated. Hatanaka, Takahashi, and Lehman are silent as to the use of a control unit which controls the operation of a vibration generating unit based on the output of voltmeters and ammeters.

Kawatsu teaches a fuel cell system which uses a control unit (38) that carries out the routine of controlling the fuel cell output based upon the measurements of a voltmeter (32) and ammeter (233) for the stack of fuel cells to provide controlled output (Column 14, Lines 4-11; Column 16, Line 46-Column 17, Line 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a control unit that provides control of the vibration unit of Hatanaka, Takahashi, and Lehman's vibration generating unit using voltmeters and ammeters on both the load and fuel cell components because Kawatsu teaches it enables the stack of fuel cells to be operated at a desired output voltage. To one of ordinary skill in the art at the time of the invention it would have been obvious to apply a voltmeter to the load because the load would have an effect on the desired output voltage of the fuel cell.

17. Claims 8, 9, 18, 19, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1, 11, and 26 above and further in view of Gyoten et al. (US 6117579).

Regarding claims 8, 9, 18 and 19, the teachings of Hatanaka et al., Takahashi, and Lehman et al. as discussed above are herein incorporated. Hatanaka, Takahashi, and Lehman are silent as to a porous separator having a hydrophilic or hydrophobic coating material.

Gyoten et al. teaches the use of a porous current collector with a porous electrode layer composed of a hydrophilic material with random additions of water repellency (hydrophobic finish) to provide channeling and easy removal of water within the electrodes (Column 2, Lines 41-48; Column 2, Line 56 – Column 3, Line 6). The fuel cell stack (Figure 1) shows the separator (5) on the oxidant side of one cell and the fuel electrode side of the adjacent cell. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Gyoten's electrode layer with hydrophilic and hydrophobic regions in Hatanaka modified by Takahashi's porous separator for the benefit of providing channeling and easy removal of water from the electrode.

Regarding claim 29, the teachings of Hatanaka et al., Takahashi, and Lehman et al. as discussed above are herein incorporated. Hatanaka et al., Takahashi, and Lehman are silent as to the vibrating the fuel electrode when the output of the fuel cell is lower than a threshold.

Gyoten et al. teaches the use of a control unit which controls a vibration device and produces vibration intermittently or based on the output of a fuel cell to improve performance by removing blockage in the gas channels or the pores of an electrode (Column 3, Lines 38-48; Claim 14). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Gyoten's control unit to vibrate the fuel electrode of Hatanaka modified by Takahashi when the output is lower than a threshold value for maintaining the fuel cell performance by using feedback.

18. Claims 8, 9, 18, and 19 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1, 11, and 26 above and further in view of Taniguchi et al. (US 6083638).

Regarding claims 8, 9, 18, and 19, the teachings of Hatanaka et al., Takahashi, and Lehman et al. as discussed above are herein incorporated. Hatanaka, Takahashi, and Lehman are silent as to a porous current collector having a hydrophilic or hydrophobic coating material.

Taniguchi teaches a porous current collector (200; Figure 6a) with both a hydrophobic layer (202) and a hydrophilic layer (203; Column 12, lines 43-62) next to the anode (Figure 6) for the benefit of providing a current collector which lets out water to not stay at an interface so reaction gas is supplied without obstacle and the membrane is efficiently humidified (Column 2, Lines 28-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a current collector with a hydrophobic and hydrophilic layer next to both the cathode and anode

because Taniguchi teaches it allows for water to not stay at an interface to maintain supply of reaction gases and to efficiently humidify the membrane.

19. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claims 1 and 11 above, and further in view of Maricle et al. (US 4125676).

Regarding claims 10 and 20, the teachings of Hatanaka et al., and Takahashi as discussed above are herein incorporated. Hatanaka and Takahashi are silent as to the use of a current collector with holes at a side of the fuel electrode catalyst layer which are smaller than those on the opposite side.

Maricle et al. teaches a current collector (110), fuel electrode catalyst layers (104) in contact with the electrolyte layer (108) and further teaches layers adjacent to the current collector which are comprised of thick large pore (holes) layers adjacent to the separator and thinner smaller pore (holes) layers adjacent to the catalyst layer to provide free flow of a reactant gas yet still maintain separation (Column 6, Lines 23-44). It would have been obvious to one of ordinary skill in the art at the time of the invention to have Maricle's current collector with differing pore layers in Hatanaka modified by Takahashi's fuel cell for the benefit of providing free flow of reactant gas to the catalyst layer yet maintaining separation.

20. Claims 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi and Lehman et al. as applied to claim 11

above, and further in view of Tanaka et al. (US 2002/0187380) and Kitamura et al. (US 4883717).

The teachings of Hatanaka et al., Takahashi, and Lehman as discussed above are herein incorporated. Hatanaka and Takahashi are silent towards the use of an inner and outer body with a vibration damping material which connects the two bodies.

Tanaka et al. teaches the use of an outer body (10, housing case) and an inner body (52, fuel cell stack) which is contained in the outer body and connected to each other by way of mounts (86, 88) for the benefit of preventing positional deviation from vibration and deformation [0059] by isolating a section of the fuel cell stack to the outer housing but is silent towards the mounts being composed of a vibration dampening material such as butyl rubber. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Tanaka's inner and outer body with mounts in Hatanaka modified by Takahashi's fuel cell powered device for the benefit of preventing positional deviation from vibration and deformation.

Kitamura et al. teaches vibration dampening between one part to another with the use of butyl based material (Column 6, Lines 23-24) which is interposed between two plates (Column 2, Lines 17-23) for the benefit of workability and increased vibration-damping ability to isolate the vibration to reduce noise (Column 1, Lines 17-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Kitamura's butyl based material in Hatanaka modified by Takahashi and Tanaka's fuel cell mounts between the inner and outer body because Teklanika teaches it for the benefit of dampening and isolating vibration of the electrodes of the fuel cell from the

rest of the device to minimize positional deviation and deformation and Kitamura teaches it minimizes the noise generated.

21. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi, Lehman et al., Tanaka et al., and Kitamura et al. as applied to claims 11 and 21 above, and further in view of Little (US 5642413).

Regarding claims 22 and 23, the teachings of Hatanaka et al., Takahashi, Lehman et al., Tanaka et al., and Kitamura et al. as discussed above are herein incorporated. Modified Hatanaka is silent as to an information notifying unit which transmits vibrations. Hatanaka et al. further teaches a fuel cell system which is used as a power supply for portable electronic devices such as cell phones [0001].

Little teaches the use of an information notifying unit (16) which is arranged in a inner body (28) which transmits vibration to an outer body (14) (Column 4, Lines 27-40) for the benefit of alerting a user to a call [Abstract]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the vibration generating unit of modified Hatanaka's fuel cell as a notifying unit because Little teaches that a vibration generating unit (information notifying unit) can be used for the benefit of providing notification to a user by way of vibration.

22. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka et al. in view of Takahashi, Lehman et al., and Little.

Regarding claim 25, Hatanaka et al. is directed to a fuel cell (32) comprised of the following:

- a fuel electrode [0003],
- an oxidant electrode [0003], and
- generates electric power based on a supply of organic liquid fuel [Abstract].

Hatanaka discloses carbon dioxide which is emitted as a by-product of power generation and adheres to the fuel electrode [0026] which is removed with the use of convection [0027] but is silent towards the use of a vibration generating unit. Hatanaka et al. further discloses a fuel cell system which is used as a power supply for portable electronic devices such as cell phones [0001].

Takahashi teaches electrode plates which form bubbles during charging that are adhered to the surface of the electrode which are removed with the use of a vibration generating unit to remove gas bubbles which form on an electrode for the benefit of quickly removing them to reduce electrical resistance [Abstract].

Hatanaka and Takashi are analogous art because they are both concerned with removing bubbles from the surface of an electrode. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Takahashi's vibration unit in Hatanaka's fuel electrode for the benefit of quickly removing adhered gas bubbles using vibration to reduce blockage and increase flow of fuel to the electrode.

Lehman et al. teaches auxiliary devices (parasitic loads) of the fuel cell which are driven by the output of the fuel cell main unit for the benefit of supporting the functioning

of the fuel cell (Column 2, Lines 44-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to power the vibration generating unit of Hatanaka modified by Takahashi by an output of the fuel cell because Lehman teaches it is well recognized in the art that sub-system in support of the operation of the fuel cell can draw a parasitic load from the fuel cell.

Little teaches the use of an information notifying unit (16) which is arranged in a inner body (28) which transmits vibration to an outer body (14) (Column 4, Lines 27-40) for the benefit of alerting a user to a call [Abstract]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the vibration generating unit of modified Hatanaka's fuel cell as a notifying unit for a cell phone because Little teaches that a vibration generating unit (information notifying unit) can be used for the benefit of providing notification to a user by way of vibration.

The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art. (MPEP 2143)

Response to Arguments

23. Applicant's arguments filed August 28, 2008 have been fully considered but they are not persuasive.

Applicant's principal arguments are:

(a) the cited references including Lehman do not teach the vibration generating unit to be driven by a part of an output of the fuel cell main unit,

(b) the battery casing is not a separate substrate but an outer portion of the battery and calling the battery casing a substrate is not a reasonable interpretation,

(c) the Gyoten reference does not disclose that the fuel electrode side current collector is made to have the hydrophilic and hydrophobic regions and a fuel electrode side of a fuel cell does not have or form water,

(d) the amended matter of claims 10 and 20 teach a continuous hole having different diameters,

(e) the fuel cell stack cannot be both an inner body and a fuel cell because something cannot be held onto itself and that no inner body is disclosed,

(f) the Kitamura reference does not disclose that there is a benefit for providing a high vibration-absorbing ability between an outer body and an inner body that holds a fuel cell,

(g) the vibration damping material claimed in claim 21 would absorb the vibrations transmitted through the inner body and not allow the user to be notified.

In response to Applicant's arguments, please consider the following comments:

(a) Lehman teaches that auxiliary systems which operate in support of a fuel cell can be powered by an output of the fuel cell (parasitic load). It is well within the knowledge of one of ordinary skill in the art at the time of the invention to have any

support apparatus such as the vibration generating unit to be powered by the fuel cell. As the MPEP states "the rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art" (MPEP 2143);

(b) a substrate is viewed as any supporting material or surface by which the fuel cell and vibration unit is supported on. The battery casing of Takahashi would provide sufficient support and ability to transmit vibrations as stated in the reference [0038]. A casing for an electrochemical cell (such as a battery) would define the outer portions of the device. Applicant argues on Page 20 of the Remarks "One skilled in the art would consider the fuel cell main unit to encompass the outer portion of the fuel cell main unit". This argument is unclear.;

(c) the current collector of Gyoten is described in the cited section of the reference to have an "electrode layer comprising a porous base area with water repellency and a penetration area higher in water permeability than in the base area." The electrode in contact with the current collector would effectively function as the coating section as required in the limitation of the claim having the hydrophobic and hydrophilic regions. It is well known that depending on the type of fuel cell, water can be formed on the fuel electrode side, further evidence is provided by Yamada et al. (US 5432023) if required;

(d) the amended claim language states "has at least one hole which penetrates". The definition of penetrate as defined by the Random House Dictionary states "to enter into the interior of". In the broadest reasonable interpretation of the claim language, the pores of the Maricle reference sufficiently penetrates the current collector as outlined in the claims. Nothing in the claim language teaches a continuous hole;

(e) the office action clearly states that the outer body is the housing case and the inner body is defined as the fuel cell stack. The housing and the fuel cell stack are separate component which in combination are parts of the complete fuel cell assembly;

(f) the Tanaka reference teaches mounts which are used to help prevent positional deviation and deformation from vibrations. Kitamura was used to further modify the composition of the mounts as being butyl rubber because both reference deal with isolation and control of vibrations. The teaching of mounts used by Tanaka in view of Kitamura would be obvious to one of ordinary skill in the art to be used to connect an inner body to an outer body as discussed in the rejection;

(g) the vibration dampening material is as described, "dampening", this material would provide a decrease in the amount of vibrations but would not totally eliminate them as asserted by the Applicant. A dampened vibration would still provide a degree of vibration to allow for notification if required.

Conclusion

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. H./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
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